Application No. 09/987,046

AMENDMENTS TO THE CLAIMS

The following claims replace all prior versions and listings of claims in the application:

1 (previously presented). A method of converging an adaptive filter of a communication channel between a near end and a far end, and having a hybrid connection responsible for transmission echo of near end signal, comprising the steps of:

initializing a nominal step size value and a penalty point value;

combining said nominal step size value and said penalty point value to generate a step size value; and

dynamically changing said step size value in response to a characteristic measure of a quality of said communication channel, wherein said step size value is decreased:

by adjusting said penalty point value when a tone originating from the far end of the communication channel is detected;

by adjusting said penalty point value when full convergence is achieved;

by adjusting said nominal step size value when an achieved combined loss is approximately 15 dB;

by adjusting said penalty point value when a power level of a residual error signal, P_e, is less than -60 dBm0 or a far-end channel signal, P_x, is less than -45 dBm0, that is when $P_e < -60$ dBm0 or $P_x < -45$ dBm0;

by adjusting said penalty point value when a level of said channel's near-end background noise is high; and

by adjusting said penalty point value when weak double-talk in said communication channel is detected.

Claims 2-7 (cancelled).

8 (original). The method of claim 1, wherein:

said step size value is reset by adjusting said nominal step size value when divergence is detected.

9 (original). The method of claim 1, wherein:

said penalty point value is reinitialized periodically.

10 (original). The method of claim 9, wherein:

said period of reinitializing said penalty point value is once every 40 samples.

11 (original). The method of claim 10, wherein:

said period corresponds to 5 ms for a 8 kHz sampling rate.

12. (cancelled)

13 (previously presented). The method of claim 10, wherein:

said step size value is decreased by adjusting said nominal step size value when a combined loss exceeds 15 dB.

14 (original). The method of claim 10, wherein:

said step size value, μ, is expressed by the equation $\log_2(\mu) = 1 + \log_2(\mu_0) - \log_2(f(P_x)) - \log_2(g(N)) - \rho$, where ρ represents said penalty point value, μ_0 represents said nominal step size value, $f(P_x)$ is a function of a far-end power measured within said channel, g(N) is a function of the taps of said adaptive filter; and

ρ has a positive or negative integer value of zero, one, or two assigned to it for every sample within said reinitializing period.

15 (previously presented). The method of claim 1, wherein:

said weak double-talk is detected in said communication channel when a near-end speech signal is at least 6 dB less than a far-end speech signal and at least 12 dB above a noise floor.

16-18 (cancelled)